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AVIATION—THE KEY TO ALASKA'S DEVELOPMENT

MARVIN M. KOMEN
High School, Bedford, Iowa

"This is a Nordic land, created for Nordic people . . . it is only waiting for . . . people who are a match for it . . . here one can study how a great empire is conquered. If we think of the future of our race we should not forget Alaska."

Was this statement a product of an American bigot? No, it is but a quotation from a book entitled "Lebensraum" by Alfred Woolschlager which was produced especially for Adolph Hitler at a time when the Nazis envisioned their world domination. This philosophical disciple of world expansion was neither the first nor the last to predict enormous possibilities for the once so-called "Ice Box of the North."[1] Even Woodrow Wilson, our World War I president, in one of his messages to Congress in December, 1913, characterized our last frontier as "A storehouse which should be unlocked."

The key to unlock this "storehouse" is the key which has opened all frontier areas—transportation. Unexploited, virgin territory can be developed only by people who settle in it. True, the old American pioneers were willing to suffer many hardships in crossing the prairies and deserts in order to reach the land with a future, the West. However, the coming of the railroads saw the epic expansion of our last contiguous frontier because greater numbers of people and quantities of freight could then be transported to this new land at a comparatively low cost. Then, too, transportation enabled its valuable resources to develop and expand as a result of the available means of reaching markets in the populated East.

PHYSICAL FEATURES AND CLIMATE IN RELATION TO TRANSPORTATION

The physical features and climatic conditions of Alaska have a direct bearing in the relationship of constructing an adequate

[1] *The Economist*, London, November 4, 1944

transportation system in the territory. From the southern point of Alaska to the Gulf of Alaska, an area known as the Pacific Mountain and Valley Region, the Pacific Coast is deeply indented by many long arms of the sea, called fiords. Here the construction and maintenance of long segments of roads, railroads and other modes of surface transportation is rendered impractical by such terrain. Another handicap to surface travel in this region is the heavy precipitation which may wash out roads.

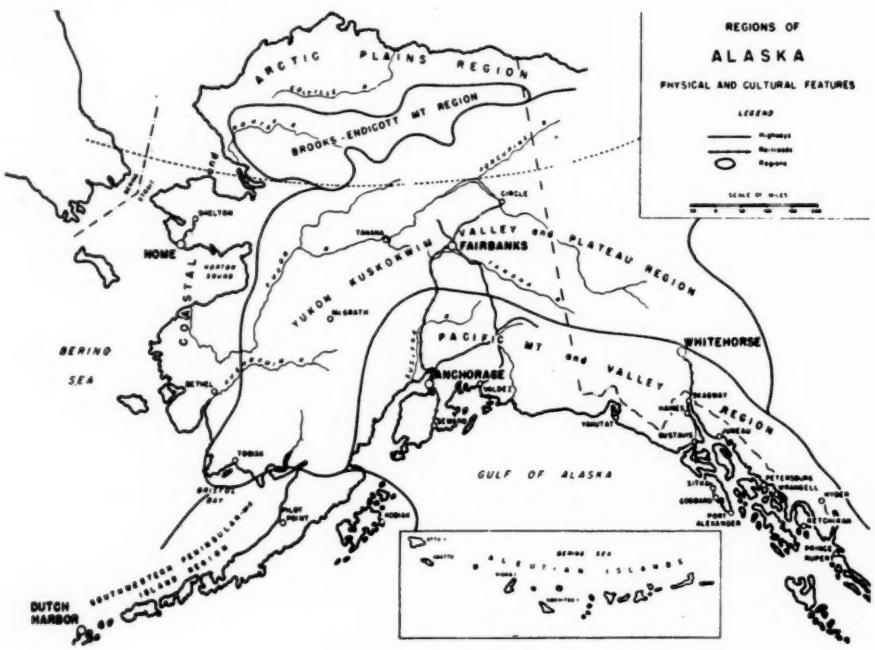

Fig. 1. Regions of Alaska

The greater part of the Yukon-Kuskokwin Valley and Plateau Region (Fig. 1) is a continuation of the plateau relief of the United States and Canada. Most of the area is characterized by flat-topped highlands separated by broad stream valleys and lowlands. It is a poor base for roads and railroad beds since it is frozen solidly underneath in the winter, while its surface becomes swampy as a result of the thawing under an almost continuous heat-radiating summer sun.

The Coastal and Arctic Lowland Region is a relatively barren land thru which no organized transportation system exists except for some air service in the vicinity of Nome. As a result of long,

cold winters the ground is perpetually frozen at a depth of a few feet. The thawing in the summer causes a number of local lakes and swamps to be formed which makes surface travel difficult. Water travel is limited to a two to four-month period when ports are ice free, but even then floating ice hinders navigation.

The Southeastern Peninsula and Island Region's rugged, broken and disconnected topography prevented surface transportation from developing to any great extent. Only inter-island boats which operated on a non-scheduled or long interval basis served the more populated islands. Almost unpredictable weather conditions make air transportation dangerous and difficult. However, some of the best flying weather for international routes can be found north of the islands in the Bering Sea.

GROWTH OF TRANSPORTATION

Not so many years ago there were only two available means of transportation in Alaska. Steamers plied along the coast and inland waterways during the summer months, while dog sled was the only feasible means of communication between communities during cold, snow-bound winters. Because of extreme climatic conditions, steamer traffic usually closes from October to May, leaving Alaska practically isolated even today as far as water transportation is concerned.

Railroad Transportation. Congress, recognizing the need for a railroad in Alaska authorized President Wilson, in 1914, to select a suitable route. After continuous construction from 1915 to 1923, President Harding drove a golden spike at North Nenana as a symbol of the completed Alaska Railroad. The railroad runs from Seward and Whittier, ports on Kenai Peninsula and Prince William Sound, thru Anchorage to Fairbanks which is 470.8 miles from Seward (Fig. 1). Branch lines provide 30 additional miles of service to the farming and coal mining regions of the Matanuska Valley and the coal mines on the Healy River.

This railroad operates the year around, but its maintenance in the winter time is extremely difficult. On occasions it is forced to suspend operations for varying periods. During the spring the right-of-way is subject to wash-outs and land slides because of the thawing of frozen ground and snow. As a result, it is expensive to operate and maintain, and this expense is reflected in the freight rates and passenger fares that must be charged. Because of this, the road has been operated at a loss except for the years 1937,

1938 and 1940. The high rates charged by the road have had an adverse effect upon the development of Alaska adjacent to it, since some commodities, which would be shipped at a lower rate, have not been developed and thus the volume carried by the road is not as high as it could be. For example, it is cheaper to ship some food commodities from Seattle to parts of Alaska which are closer to the Matanuska Valley Farming Project than it is to use the food produced there, which would have to be transported by the Alaska Railroad.

The only other railroad of importance in Alaska is the line which extends about 110 miles from Skagway in southeastern Alaska to Whitehorse, Yukon Territory, Canada. However, most of this line lies within the jurisdiction of Canada, only 20.4 miles being over Alaskan Territory.

Highway Transportation. Up to the present time most road construction in Alaska has been the building of simple roads for the purpose of giving the miner and settler in isolated communities a connection to a center of supply. In 1940 there were less than 2,500 miles of roads.

The most ambitious highway construction in Alaska, the Alcan Highway, was undertaken as a military measure during World War II. Connecting with the highway and railway network of the province of Alberta at Dawson Creek, it extends 1,671 miles northward by way of Fort St. John, Fort Nelson, Whitehorse and Big Delta. The route from Big Delta follows a previously constructed road for 75 miles to Fairbanks. Estimated cost of construction was between $25,000,000 and $30,000,000. The 24-foot-wide highway is surfaced with crushed stone and bridges some 200 streams.

Other highways of any importance which connect towns or areas are as follows: The Richardson Highway, 371 miles long, between Valdez on the coast and Fairbanks in the interior, is the longest span of domestic road in the territory; Steese Highway, runs from Fairbanks to Circle with a branch to Livengood, linking Fairbanks with numerous smaller towns and communities north and east and provides about 233 miles of road. Because of the climatic conditions both of these highways are closed to traffic from about October to May.

There is bus and truck service over these important roads from the late spring to autumn. The fact that motor vehicles are prohibi-

ted from performing their service during the entire year handicaps them in their competition with the railroad.

Air Transportation. Governor John W. Troy, (Governor during the fiscal year, June 30, 1938) said, "In the continued development of Alaska, the thing of paramount importance is to improve transportation and the thing of paramount importance in improving transportation is aeronautical development." Aviation began and developed in Alaska in conjunction with its inauguration and growth in the United States. Similarly its role, at first, was auxiliary to other methods of transportation—water, rail, dog sled, and surface motor vehicles.

TABLE I

REVENUE DISTRIBUTION OF ALASKAN AND UNITED STATES AIR LINES
(July 1940–June 1941)

	Alaskan Air Lines (%)	United States Domestic Air Lines (%)
Passenger	67	71
Freight	25	3
Mail	7	24
Other	1	2
	100%	100%

Source: Civil Aeronautics Board Orders 2062
Civil Aeronautics Board "Recurrent Airline Statistics"

Air transportation in Alaska, as well as in other parts of the world, had to prove its value before its use could become extensive. This was a slow process developed by "bush" fliers without very many airway aids such as lights, airports, maps, and weather reports. Usually an air line was composed of one obsolete plane and a pilot who was at the same time owner, mechanic, ticket seller and freight agent.

There were no schedules, stops, or times of arrival and departure. It was this type of aviation that opened new remote sections of Alaska to commercial development, which could not be reached in the past because no surface transportation was available, or because of rugged terrain and climatic handicaps. The cost for service of this type depended upon the hazards of landings and take-offs. It was not unusual for planes to land on river bars, or, equipped with pontoons, on the countless lakes that feature the landscape. In winter, planes were equipped with skis for landings on snow-covered swamps, lakes or rivers.

The present day air routes generate in web form from Anchorage, Nome, and Fairbanks, the commercial centers of Alaska (Fig. 2). Even today, the various carriers fly over routes of a designated area with a more or less regular interval, marked more often by the day of the week rather than the time of day, while stops are planned according to the individual destination of the passengers.

The Alaskan airlines, at the present time, have assumed a function in passenger travel similar to that of the airlines in the

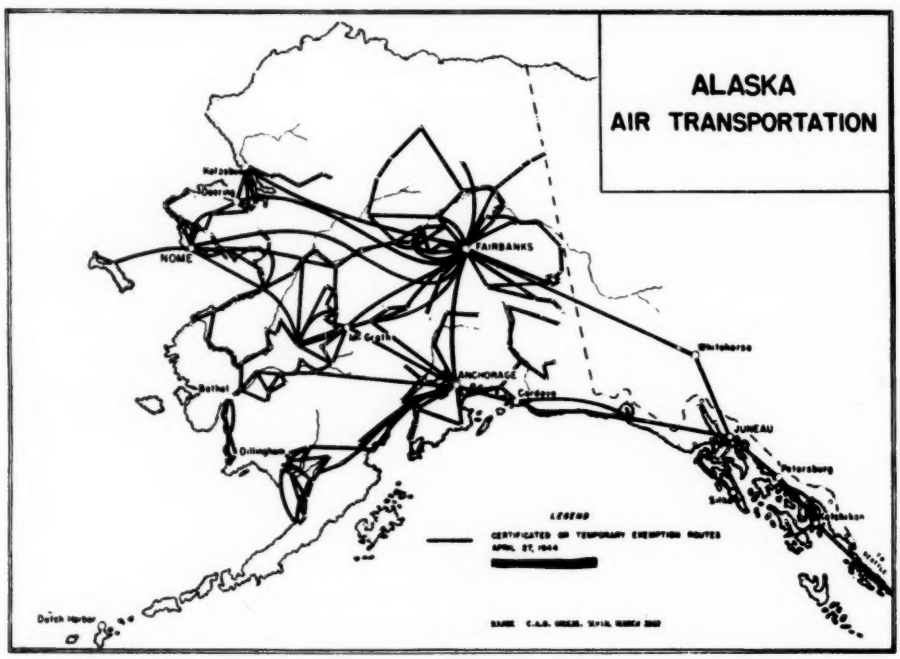

Fig. 2. Alaskan air transportation facilities, 1944 (Data from Civil Aviation Board Orders, Serial Number 2062)

United States. This fact is revealed (Table I) when one notes that 67 per cent of the total revenue of Alaskan airlines was derived from passenger traffic while the United States domestic airlines derived 71 per cent from this source.

Alaskan carriers' high position as an agency of transportation is noted (Table II) when the number of airline passengers per 1000 population is computed. In 1940 it was 502. This figure is staggering when compared to that of the United States, where only 21 persons per 1000 population were air passengers.

Twenty-five per cent of the territorial airlines' revenue was derived from freight whereas only three per cent was derived from the same source in the United States. This has earned the Alaskan airlines the title "Beast of all Burden," since they carry any commodity necessary to the population or in the development and exploration of Alaska.

TABLE II

COMPARISON OF TRANSPORTATION FACILITIES BETWEEN ALASKA AND UNITED STATES, 1940

	Alaska	United States
Area (Square Miles)	586,400	3,026,789
Population	72,538	131,669,275
Miles of Railroad	643	233,000**
Miles of Highway	2,365*	545,000
Miles of Railroad per 1000 Sq. Miles	1.1	77
Miles of Highway per 1000 Sq. Miles	4.1	180
Railroad Passengers	38,400	224,627,000***
Railroad Passenger Miles	5,428,300	19,773,193,000***
Air Passengers	36,300	2,728,000
Air Passenger Miles	6,817,300	1,041,174,000
Rail Passengers per 1000 population	531	1,710
Air passengers per 1000 population	*502*	*21*
Rail Passenger Miles per Capita	75	150
Air Passenger Miles per Capita	*94*	*8*

* Open only 5 or 6 months a year
** Class I, First Track
*** Exclusive of Commuters
Sources: U.S. Department of Interior, "Statistical Abstract of the United States"
U.S. Bureau of Census
Alaska Aeronautics and Communication Commission
Interstate Commerce Commission
Civil Aviation Bureau

What of the cost of such transportation? Is it not out of reach of the man with a moderate income? In comparing the rate per mile in Alaska with that of the United States, it seems quite expensive to travel by air in Alaska. Comparing the cost per trip between plane and land transportation in Alaska, the expense of the former is a tiny fraction of the latter. The estimated cost of a trip between Nome and Fairbanks by dog team, one way only, totaled about $500 and took approximately 30 days of travel. The plane trip, consuming only four hours of time, costs about $78.

Rates for air travel in most of Alaska fluctuate according to

the direct cost of each trip. They are in accordance with the pay load on hand and the revenue that will be made on the return trip. When reduced to a cent-per-mile basis, the "going rates" will vary from 11 cents to 32 cents per mile, averaging about 20 cents per mile. This cost per mile does not compare favorably with the domestic rate for United States airline passengers, which has remained around 5 cents per mile. However, it is likely that the wide variation in Alaskan air passenger rates will begin to narrow to a more or less fixed cost now that air transportation is on a solid foundation.

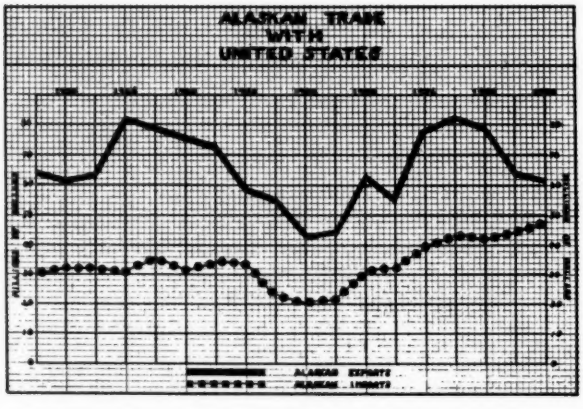

Fig. 3. Comparison of Alaskan imports and exports showing consistent trade balance in favor of Alaska. (Data from annual reports of U. S. Customs Office, Juneau, Alaska)

Economic Need for Air Transportation

Even with its limited facilities of surface transportation, Alaska has reached an economic growth whose proportions are not generally appreciated. The annual value of trade between the United States and Alaska in recent years has been in excess of $100,000,000, the balance being in favor of Alaska (Fig. 3). About 98 per cent of Alaska's world trade is with the United States. The nature of the United States-Alaskan Trade (Figs.

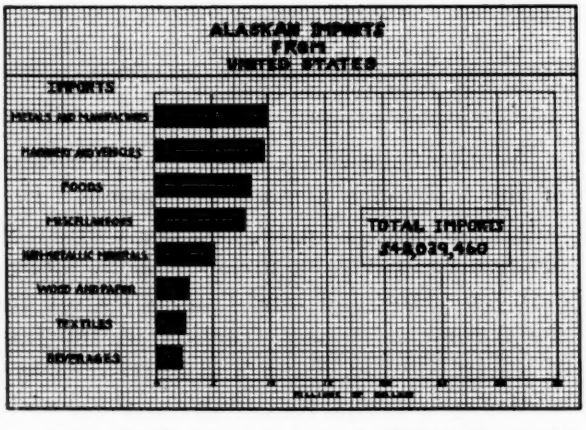

Fig. 4. Alaskan imports from the United States, 1940. (Data from the Bureau of Foreign and Domestic Commerce)

4 and 5) reveals that Alaska lacks an industrial development and that the development that has taken place is in the basic extractive industries. Another interesting fact is that 17.2 per cent of Alaska's import trade with the United States is in food products, a situation which exists as a result of the territory's inability to feed its population in its present stage of agricultural development. This trade may well increase if aviation becomes developed to the extent that various industries can be carried on for longer periods of time during the year.

Mining. A valuable contribution to the economic life of Alaska made by air transportation was the expansion of mining operations. Before aviation was developed, extensive mining operations were impractical unless adjacent to water transportation, which served as a means of bringing in personnel and supplies and transporting the extracted mineral to the outside world (Fig. 6). Now, with the use of aircraft, personnel and supplies may be transferred to these locations long before and after the rivers are navigable, and shipment of these minerals can take place continuously, instead of having to wait for the few, infrequent boats. It has also opened up new mining areas that were not accessible by other existing means of transportation.

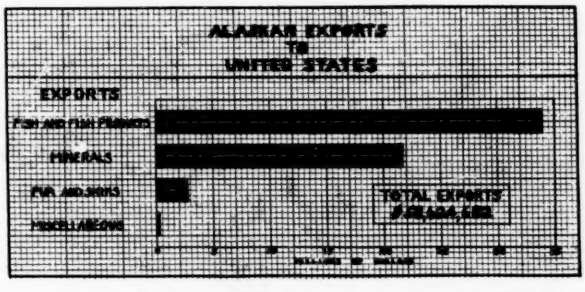

Fig. 5. Alaskan imports to the United States, 1940. (Data from the Bureau of Foreign and Domestic Commerce)

In 1938 Alaska's mines yielded $25,296,000 worth of gold and other valuable minerals. The total amount of mineral wealth contributed by Alaska to the world since 1880 is about $803,114,000. Each year brings further proof that profitable deposits can still be found and that large reserves of lower grade lodes and placers can be developed with better air transportation, economical methods, and modern specialized machinery. The new mineral areas will be opened up by aviation thru its status as a specialized freight transporting agent.

Fisheries. Fishing and canning of fish is the major industry of Alaska even exceeding that of minerals in total dollar value of trade. Halibut and salmon are its two most plentiful fish. Peters-

burg serves as headquarters for the large halibut fleet, while Ketchikan packs more salmon than any other city in the world. Cook Inlet is the site of numerous salmon canneries (Fig. 6). Because of the seasonal nature of this occupation, many persons engaged in it do not reside in Alaska permanently, but leave at the close of each season and return in the spring or early summer.

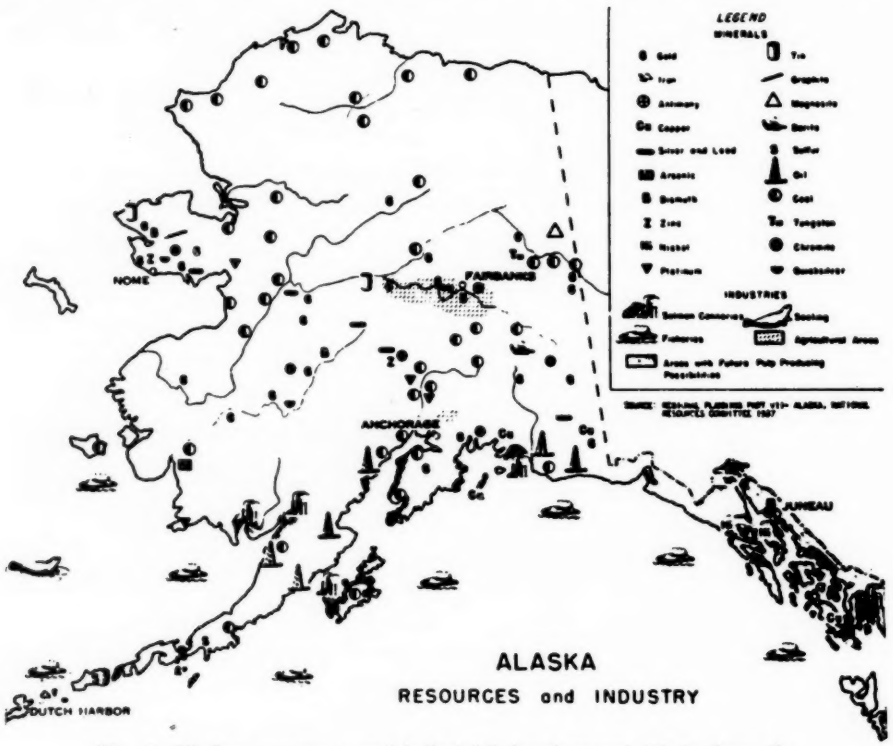

Fig. 6. Alaskan resources and industrial development (Data from the National Resources Committee)

A large percentage of these people traveling to and from the United States creates an unusual demand for air transportation facilities.[2]

Furs and Skins. In 1940 Alaska supplied the United States with $2,717,265 worth of furs and skins. Fur bearing animals consist of beavers, muskrat, squirrel, fox (blue, red, white, cross, silver and black), marmot, wolf, lynx, marten or sable, mink, weasel or ermine, land otters, black polar and brown glacier bear, seal, and sea lion. The fur-seal industry is, of course, under government regulation.

[2] U. S. Civil Aeronautics Board, Serial Order Number, 1788.

A growing industry in Alaska is the raising of fur-bearing animals, principally silver or black foxes and mink. Numerous fur farms have been successful and have encouraged the establishment of others. This industry is but one other example of an enterprise requiring fast transportation to distant markets, especially for sales to processors. With the establishment of a scheduled air route to Alaska from the United States, major fur markets in Eastern United States can be reached rapidly.

Tourist Travel. The tourist trade to Alaska has been of negligible importance under the past system of surface transportation. Few people could afford the costly, slow methods of steamer, rail and river travel from the United States to Alaska, and it also took many weeks to make such a journey. Ordinarily an individual has only two or three weeks of the year for a vacation and is, therefore, limited in his scope of travel to places that can be reached

TABLE III

TRAVEL TIME COMPARISONS

Between Seattle and	Boat or Boat and Rail	Proposed Air Service
Juneau	72 hours	4½ hours
Anchorage	147 hours	6 hours
Fairbanks	165 hours	6 hours
Nome	192 hours	9 hours

Source: Time Tables of Alaskan Steamship and Railroad Companies
Air Service Proposals in Pacific Case Hearings, Civil Aviation Board, 1945

speedily. The airplane will make it possible for this average person to enjoy the thrilling scenic wonders of Alaska on his short vacation (Table III). Big game hunters, who came to Alaska in greater numbers before the war, were using planes extensively in establishing base camps at remote places when preparing to hunt caribou, moose, sheep, goats and bears.

ALASKA'S POSITION IN THE GLOBAL AIRWAY SYSTEM

Many articles have been written stressing Alaska's commanding position in world air routes. Transport pilots flying to Alaska are convinced that nations besides the United States will desire to establish and operate great circle airways between the continent of North America, the Orient, Russia, and perhaps India. Even if it is possible for planes to carry enough fuel so that it is not necessary to land, commercial companies will not want to by-pass

Alaska because they would rather carry revenue cargo than extra fuel, a non-revenue cargo. This refueling privilege, solely in the hands of the United States, is our country's ace-in-the-hole—our assurance of parity at international air commerce conference tables—at least in planning for air routes including the Arctic and North Pacific Areas.[3]

Before the War these northern routes were deemed impossible by any but dreamers. When World War II forced these routes to be flown valuable experience was gained in gathering of vital weather data, establishment of airways, and in polar air navigation.

After a review of such facts as these, it was the opinion of a congressional aviation committee that Alaska and the Aleutian Chain would make an entirely feasible and practical air route to the Orient.[4] The great circle route from Seattle, Washington, to Japan and China intersects the Aleutian Chain and requires an over-ocean flight at the maximum 1,700 miles nonstop, approximately 800 miles shorter than the flight from San Francisco to Hawaii. If an airline desires, the flight to the Orient may be made in short hops, none in excess of 750 miles and without flying over any foreign territory until Asia is reached. This is possible because the flight can be made satisfactorily 12 miles or more out to sea from the Canadian shore until southern Alaska, about 700 miles from Seattle, is reached. The great advantage from an economical point of view, which this great circle route holds over the air route flown by Pan American Airlines, via Hawaii, Midway, Wake, and Guam to the Orient, is that a pay load may be had from point to point. In the latter, stops at the various islands other than Hawaii are made mainly for fuel. Already several United States Airlines have applied for permission to fly the great circle route to the Orient via Alaska. This permission will be granted since the United States government has already taken the view that a world air route is necessary for our future national defense. The granting of foreign routes to Europe and western Asia reflects this attitude and assures Alaska of a dominant position in the airway system of the world.

CONCLUSIONS

In a territory of adverse climatic conditions, rugged terrain

[3] *Aviation Daily*, February 28, 1944

[4] Union Calendar No. 617, 78th Congress, 2nd Session, House of Representatives, Report No. 1893, September 18, 1944

and sparsely populated areas such as Alaska, extensive road and railroad construction has not been economically worth while. Therefore, the inhabitants of Alaska cannot effect an early connecting network of roads nor of railroads. However, long distance, year-round transportation in Alaska will, without doubt, be accomplished to a greater degree by air because of its great speed and ability to reach otherwise inaccessible points where economic development can take place.

The dependence of the entire region of Alaska upon the airplane as an available means of transportation at all times of the year is unparalleled anywhere in the world. Resulting from this, the people of the territory have become intensely air-minded and are insistent on this most rapid and economical means of transportation.

The advantage of an orderly and well developed air transportation system would benefit, not only the people of Alaska, but the economic life of the United States because Alaska is a substantial market for United States industrial and agricultural products. On the other hand, it is sending to the United States valuable quantities of gold, furs, fish and other products.

Permanent settlement of Alaska by an agricultural and industrial population would be encouraged by ready, frequent and low-cost air service between the United States and Alaska. Now that World War II is over, further projects for improved highway communication between the United States and its Alaskan Territory can be completed. However, these projects will require a period of years for completion. An extensive air program could be inaugurated in a short period of time, and at comparatively little cost, to give a new impetus to the economic development of the vast storehouse that is Alaska.

UNIT III: POPULATION

For Course in Global Geography*

MARY VIOLA PHILLIPS
New Kensington, Pennsylvania, High School

I. OVERVIEW

Surface barriers have for centuries kept people apart but the air age has changed that. The lives of all people of the world are touched by the air.

Nothing on earth really matters except in terms of people. If we are to understand adequately human problems of the world we need to develop a better understanding of the world in terms of population pattern and the natural environmental facts that help to explain these distributions.

The study of the inter-relations of the pattern shown by maps will be an essential and vital part of this unit.

By means of maps, graphs and statistical tables the student will investigate the population density of the regions of the world and study the implications of differences in and distribution of natural features and resources.

II. Outline

A. Density of Population
- 1. Present World Population
- 2. Increase in Population Since 1800
  - a. Reasons for increase
- 3. Dense Population Areas of the World
  - a. Eastern Asia
  - b. India
  - c. Western Europe
  - d. Eastern United States
    - (1) Total number living in each area
    - (2) Total amount of land surface occupied
- 4. Areas which are Moderately Peopled
  - a. Rural United States
  - b. Parts of South America, Africa and Australia
  - c. Bordering the densely peopled areas of Europe and Asia
- 5. Sparsely Peopled Areas
  - a. Half world is sparsely peopled
- 6. Ten Leading Countries in Population
  - a. Areas and Population

*This course is offered in the high school, New Kensington, Pennsylvania. See JOURNAL for September and November, 1945, and 1946. Editor

B. Relation of Natural Features and Resources of the Earth to the Distribution of Population
   1. Influence of Climate on the Distribution of People
      a. Tropical lands
      b. Wet and dry tropical areas
      c. Dry lands—steppes—deserts
      d. Sub-tropical lands
      e. Humid Intermediate climatic areas
      f. Cold lands
         (1) Location of above climatic areas
         (2) Climatic conditions prevalent in densely peopled areas
         (3) Climatic conditions prevalent in sparsely peopled areas
   2. Influence of Land Forms, Soils and Water Resources on the Distribution of Population
      a. Land forms
         (1) Mountains—population and man's use of
         (2) Plateaus—population and man's use of
         (3) Hill lands—population and man's use of
         (4) Plains—population and man's use of
            (a) Land forms found in areas of dense population
            (b) Land forms found in areas of sparse population
      b. Soils in areas of dense population; sparse population
         (1) Kinds of soil
         (2) Conservation of soil
      c. Water resources in densely peopled and sparsely peopled areas
         (1) Amount of domestic supply
         (2) Number of rivers suitable for navigation
         (3) Waterpower
         (4) Proximity to sea—ocean and coastal margin
      d. Relation of mineral resources to distribution of population
         (1) Location of metal resources of world
         (2) Location of mineral fuels of the world
         (3) Minerals found in densely peopled areas

C. Uses Man has Made of the Earth's Resources in the Regions of Dense, Moderate and Sparse Population
   1. Development of Facilities for Interchange
      a. Amount of ocean shipping
      b. Uses of lakes, rivers and canals
      c. Roads and railroad development
      d. Development of air routes
   2. Man's Activities for Utilization of the Earth's Resources in Regions of Dense, Moderate and Sparse Population
      a. Areas of hunting and fishing
      b. Grazing areas
      c. Areas used for agriculture
      d. Lumbering
      e. Quarrying and mining
      f. Manufacturing
      g. Commercial activities

D. Space Relations of the Densely Populated Countries
   1. Area

2. Population
3. Location in latitude and longitude

E. Influence of Population on Nations
1. Races of Man
2. Advantages of a Large Population
a. Great nations originate in districts of dense population
(1) Power in numbers
3. Disadvantages of a Large Population
a. Element of weakness if people are not energetic, if land is poor or area is not industrially advanced

F. Coincidence and Divergence of Areal Distribution of Population Groups in Terms of Races, Religions, Languages and Nationalities.

G. Effect of Air Age on Our Frontiers of the Future
1. Areas of the World that Could be Frontiers of the Future
a. Location of areas
b. Characteristics
c. Natural wealth
d. Effect of airplane

III. Study Assignment Sheet

Unit III. (Laboratory Work)

Population

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World Almanac	

1. On a map of the world show the population of countries by placing one dot for each million people.
2. Show population of countries on a polar projection map. What view does this give you concerning the concentration of population?
3. Superimpose a world population map on a physical map. What natural features are predominant in areas of dense population? In areas of sparse population?
4. What is the present world population?

5. Select five countries having the largest population density from each of the continents of the world and give their area in square miles and their population.
6. What four regions of the world contain the most people?
7. In general are the densely populated regions near to the sea or far from it?
8. In what hemisphere are the more densely peopled areas located?
9. Name ten countries which include large areas of moderate population.
10. What is the name of the large sparsely peopled area in northern Africa? Why has this area but few people?
11. Make a chart for the following densely populated areas of the world—(1) Eastern Asia (2) India (3) Western Europe (4) Eastern United States.
    Show—winter surface temperatures
    summer surface temperatures
    winter rainfall
    summer rainfall
    a. What wind belts do they lie within?
    b. What ocean currents influence their climate?
12. Study a physical map of the world and answer the following questions:
    a. Where are the major mountain areas of the world located? the largest areas of hills? the largest areas of plateaus? the largest areas of plains?
    b. What ocean has the most mountainous shoreline?
    c. What kind of a shore line does the Atlantic Ocean have? the Indian Ocean?
13. Compare the physical map with the population map and answer the following questions:
    a. On what kind of land surface do most of the people of the world live?
    b. On what kind of land surface will you find the fewest people living?
14. Select the five largest countries of the world and make a chart showing:
    a. Area and population
    b. Land forms
    c. Range of latitude

d. Range of longitude
e. Chief crops
f. Chief minerals
g. Chief imports
h. Chief exports

15. Study maps showing the world distribution of metals. List in order of importance three countries which have—

a. _____ _____ _____
Areas with largest resources of iron

b. _____ _____ _____
Areas with largest resources of copper

c. _____ _____ _____
Areas with largest resources of tin

d. _____ _____ _____
Areas with largest resources of bauxite

e. _____ _____ _____
Areas with largest resources of nickel

f. _____ _____ _____
Areas with largest resources of manganese

g. _____ _____ _____
Areas with largest resources of tungsten

16. Study maps showing the world distribution of mineral fuel.
    a. Name ten countries which lead in the production of coal. List them in the order of their importance.
    b. Name ten countries which lead in the production of petroleum. List them in the order of their importance.
    c. What areas of dense population are distinguished for their production of mineral fuels? for their manufacturing?
    d. From this investigation what opinions have you formed as to the relationship between dense population and a high production of minerals? a highly developed manufacture?
17. Compare the map of principal occupations of the world with a world population map and answer the following questions:
    a. What type of activity supports the greatest number of people per square mile?
    b. What type of activity supports the least number of people per square mile?
    c. What activity covers the greatest space on the surface of the earth?
    d. What activity covers the least space on the surface of the earth?

18. Show the space relationship of the continents in the chart below

Continents	Area	Population	Range of Latitude	Range of Longitude
North America				
South America				
Europe				
Asia				
Africa				
Australia				
Antarctica				

19. Name the continents which contain—
    a. The largest amount of densely populated area
    b. The smallest amount of densely populated area
    c. The largest amount of sparsely populated area
    d. The smallest amount of sparsely populated area
20. Make a study of maps and statistics and list the continents having
    a. Greatest railroad development
    b. Largest areas essentially unused
    c. Areas of extensive grain production
    d. Greatest water power resources
    e. Largest number of automotive vehicles
    f. Largest areas of coniferous forests
    g. Largest areas of deciduous forests
    h. Greatest industrial development
21. How do the middle latitude regions of the Southern Hemisphere compare with one another in their ability to support population? Form an opinion on this question by investigating population densities of the following principal middle latitude countries of the Southern Hemisphere. Make a general survey of their resources.

Countries	Area	Population	Resources
Argentina			
Chile			
Uruguay			
Union of South Africa			
Australia			
New Zealand			

22. Study a population map of United States—
    a. Compute the density of the individual states
    b. Compare the land forms with the various averages
    c. Compare the activities with the various averages
    d. In what part of the United States do most of the people live? Why?
23. Make a world map showing the races of man. What race predominates in North America, South America, Europe, Asia, Africa and Australia?
24. Name ten large cities of the world that are centers of most densely populated areas.
25. Study a world map showing the ocean trade routes. Why does trade take place largely between the densely populated areas of the world?
26. Select a country or area of the world which seems to hold some promise for future development and investigate its natural resources: climate, topography, soils, natural waterways, minerals, forests and grasslands.
    a. Set forth your reasons for believing the country will grow in importance.
    b. What activities could be carried on?
    c. How could it supply any deficiencies and overcome handicaps?
    d. What effect will the development of airpower have on population density of regions heretofore considered of little value?

A RECENT COURSE OF STUDY IN GEOGRAPHY

ARTHUR C. SELKE
State Teachers College, Dickinson, North Dakota

A very recent course of study in geography is that for the State of North Dakota (1945). It was "slanted" to meet local conditions, of course, but in many respects this outline reflects a general trend in geography.

The war's influence is considerable but the conflict merely hastened a previous trend. Even before 1939 little known places like Wake Island, the Azores, and other places suddenly became prominent due to air transport. Now most large land areas, except Antarctica, and many smaller places have become "essentials."

This overthrows, or rather expands, previous bases for geography teaching. In the "twenties" research men like C. W. Washburne and H. O. Rugg, sought partial bases for essentials by noting the attention to places and persons given by periodicals. Those not listed often were discarded. (Illogically, Rugg's excellent place name list was not effectively applied to his own "unified" texts.) History was not so effectively pruned. A comparative example is: Place names like Washington, D.C. (or state), Houston, or Colombia, received much less attention in school than the places after whom they were named, altho the press accords the place names more attention than the persons. Such limitations to geography, never wise, are impractical now.

In the present outline, geography teaching was extended one year thru the eighth grade. Previously that subject terminated in the seventh grade. This is not an innovation for eighth grade geography teaching is done elsewhere. It had been done to some extent in North Dakota, and the experienced rural teachers and leaders insisted on adding one year to geography teaching.

The grade placement of various sections of geography raised many problems. Their assignment was determined by various criteria: maturity level of students; available and forthcoming texts, maps, atlases, encyclopedias, yearbooks, and other available reference material; the principle of proceeding from the known to the less well known (apperception to an older generation, "gestalt" to ours), the lack of well trained teachers; and other conditions.

The following grade placements were decided upon:

Grades I, II, and III

The main objective of these grades is the development of reading knowledge and other English which is basic to geography teaching. Geography is incidental in these grades.

Grade IV. Types and Journeys

Selected types of peoples are "covered" by journey geography. Texts and courses of study agree well on content of this grade. There is also a unit on small area maps.

Grade V. Northern North America

Geography begins in earnest here. Altho there is no county geography written, the course of study suggests outlines on the assumption that every county has something in common like elevations (buttes in the west, rounded hills in the "middle," and beach lines or deltas of the Red River Valley), water bodies, county seats, railroad towns, transportation lines, etc. It is hoped that county geographies will soon be written.

Considerable attention is given to North Dakota for which there are three very recent texts. Not only is the subject matter and its concomitant value great; "our state" forms the foundational basis with which the child is better able to grasp less well known regions in the future.

Altho most texts read the United States "backwards" (right or east to left or west), the North Central states of which North Dakota is a part, should be taken up next, regardless of where it may appear in the text.

Since the populated part of Canada is close to our northern boundary and mirrors the industries, culture, and to a degree the peoples of our northern boundary states, that country should be taught in close association with the United States. Newfoundland, an actual tho not political extension of Canada, Greenland and Iceland are essential largely because of their strategic value for the defense of North America, and may be taken up in this grade. Altho some texts take up part or all of Latin America, this area is better absorbed when pupils are more mature and have received Latin European geography.

Grade VI. Europe, Africa and Australia

Europe's industries, culture, language, laws, education, race, resemble those of northern North America. Its trade with our part of the world is greater than that of any other continent. Many of North Dakotans' recent ancestors live there. It is our

mother continent and should be taken up next. Since European beginnings are taught in sixth grade history, coordination between geography and history is easier if Europe is also taught in geography the same year.

The other continents are harder to assign. Africa, except Liberia, is possessed by six European powers. Egypt and Ethiopia are sometimes called "independent." It is not strange to find Africa, an underpopulated area possessed by the most overpopulated area in the world. Australia and New Zealand are mere extensions of England.

Grade VII. Asia and Latin America

Asia is a complex continent, difficult to understand and it was consequently assigned to this grade.

For similar reasons Latin America was placed here. There has been and still is a tendency to teach Latin America right after North America, at the end of the fifth and/or the sixth grade, usually with poor results. A knowledge of Spain, Portugal and Latin Europe in general is desirable, and that is taught in the sixth grade. Besides the complex minglings of races, cultures, and folkways, and the vast differences in industry, race, climate and products between northern North America and the lands southward are very great. The placement of Latin America in grade seven was, therefore considered logical.

Grade VIII. Non Continental Geography

There still remains the non continental geography to teach. This was assigned to the eighth grade. A list of units are the following.

Unit I. A comprehensive review of the work of grades V, VI, and VII

Unit II. The earth as a planet (map projections, earth movements, climate, meteorology, etc.)

Unit III. Industries based upon natural resources (fishing, hunting, lumbering, etc.)

Unit IV. Agriculture, the world's greatest industry

Unit V. Minerals and water power

Unit VI. Manufacturing

Unit VII. Transportation: the delivery of freight, power, passengers, and messages. (Transport of the last is also called communication.)

Unit VIII. Nations and their extensions of culture. Colonial powers

Unit IX. Review

* * * * *

There was no attempt to make the course revolutionary, but some sections differ in a measure, at least, from other courses of study. Due largerly to teacher turnover, an extensive review of previous work is made in the *beginning* of the eighth grade. Much of the eighth grade work is in a sense indirect review. The unit "Transportation" includes the topic usually called "communication" (Transportation of messages, Grade VIII), and sending of electricity (Transportation of power), which serves a function similar to the delivery of fuels by rail, pipe, water, or highway transport. Small area maps are introduced according to clear cut methods, including construction, games and exhibits of these. Large area maps received considerable attention. Some of these departures are useful elsewhere; some are mere adaptations to a state whose only significant industries are based on agriculture and transportation.

It is felt, however, that other communities that have not already done so, might profit by expanding their geography to as great or greater degree than that done in the last North Dakota course of study in geography.

THE BALEARIC ISLANDS

ROSINA M. PATTERSON
State Teachers College, East Stroudsburg, Pennsylvania

Islands fair
Beyond compare
Tourists come
From everywhere.

The Balearics are a group of four large and eleven small islands east of Spain. The total area of this group is 1,935 square miles; the population is 351,339. Rising from the waters are high purple cliffs which can be seen across the blue Mediterranean. The islands are full of undersea caverns which in times of invasion sheltered refugees. There are a few sand beaches on the islands. Whirlpools are numerous on the rockbound coasts of these beautiful islands; mountains are bare, gray, and mostly inaccessible.

The islands are at the crossroads of winds which sweep over hills and whip seas into a fury. The worst of these winds, tramuntanya, meaning wind from across mountains, comes from the Alps of Switzerland and France, sweeps southwestward over France, strikes the Pyrenees, is deflected with full force across the water, and attains its greatest fury in this archipelago. In winter the mistral winds from the Rhone Valley blow with such sharp force that trees permanently lean southward with the direction of the winds. In summer the warm sirocco makes living most uncomfortable.

Often during the summer seasons there is a scarcity of water, but the irrigation system introduced by the Moors makes it possible to store in reservoirs the rains of autumn and winter. Water during such dry periods is sold to land holders at a fixed price. The rainfall in January is over thirty inches while from five to ten inches fall during the summer months making an average annual rainfall of about forty inches. Winter sees the small fishing villages surrounded by a sea of mud; summer, dust.

The summers are hot with the mean temperature at 68° F. and the winters are mild with mean temperatures ranging from 50° to 60° F. The islands in general are healthful, temperate, and favorable to plant life. Deviations from this generality are caused by differences in altitude and shelter from winds in different islands or parts of islands. Forests in the area comprise stone

pine and live oak. Other flora and fauna resemble those of the Mediterranean coasts of Spain and France.

In spite of the fact that Spain controls the islands, the natives do not look upon themselves as Spaniards. They are a race similar to the Catalans and the Catalan language is commonly spoken. The inhabitants are a philosophical people who are industrious, hospitable, loyal, and crime is very rare. Women wear long voluminous skirts topped by a tight bodice over which a shawl is draped. The head is dressed by a silk kerchief tied under the chin, but on fiesta days the kerchief is replaced by a white net headdress. The men wear flat, wide-brimmed hats; short, tight-fitting jackets; and wide bell-shaped trousers.

Old Moorish customs seem to have blended with the new Christain traditions. The influence of the Moors is seen in flat roofs where the women congregate when their work is done, in the latticed galleries of the churches, and in the universal use of azulejo tiles for staircases in houses. The houses which are damp and mouldy are built of porous sandstone and keep out the summer heat and winter cold. Walls are whitewashed and the floors are of stone or dirt. Radiators are rare; the usual heating and cooking system is a charcoal brazier. Usually there is a cistern of rain water in the living room. Lack of water for hydro-electric power makes it imperative for electric lights to be turned off at 10:00 P.M.

Agriculture, one of the principal industries, is carried on by primitive methods. Harvesting of wheat is a striking example. After being cut with a scythe, the wheat is piled upon a hard dirt platform. Threshing the grain is accomplished by means of a stone flail dragged round and round by a blindfolded horse or mule. The wheat is separated from the chaff by being tossed in the air with wooden shovels and later is sifted thru a large sieve supported on two poles. After drying in the sun, the wheat is stored in the attic until it is to be taken to a nearby mill. On the terraced hillsides, the natives grow the Malmsey grapes for wine. In the fertile valleys below, orchards of olives, figs, almonds, and other fruits abound. Wheat, beans, and some vegetables are raised between the fruit trees. Women and children constitute a large part of the agricultural labor; hence a child represents an asset rather than a liability. It is not unusual to see three generations working together in the fields. On Sunday the peasants bring their produce to the nearest market. Flocks of sheep, squealing pigs, burros

laden with baskets of red tomatoes and egg plants, and two-wheeled carts form a picture of a typical scene.

There are few minerals. Minorca has some deposits of iron, copper, lead, and marble, but these are almost exhausted. Salt is obtained from sea water. Eighty to one hundred thousand tons of this commodity are exploited annually. The salt collects in shallow basins in the land known as Salinas after the sea water has evaporated. Sea water canals and causeways along which runs a narrow-gauge railroad connecting the island of salt with the embarking station intersect these basins. Trucks empty the salt into barges. Most of the salt is exported to northern countries where it is used for the preservation of cod.

The city of Iviza, the only port and capital on the island of the same name, contains some six thousand residents. Above the white-washed, tile-roofed houses rise the walls of a sixteenth century fortification which remain in almost perfect preservation. Until one hundred years ago Barbary pirates subjected the island to raids and massacres and hence the churches appear as fortresses.

Majorca's capital, Palma, is ochre-colored beside the bay. The great cathedral lifts its Gothic lacework of pinnacles and flying buttresses above the cliffs overlooking the Mediterranean. The city's terraced gardens abound with geraniums and calla lilies; the market is a multicolor of pottery, oranges, and woolen shawls. On Saturdays at a "Bottle Market" modern productions in amber and sea green, fine carved glass, painted furniture, enamels, and embroidery make their appearances.

Before the war, the chief imports of the islands were cotton, leather, petroleum, sugar, coal, and timber; and the chief exports, figs, almonds, marble, lemons, wine and rice. Most of the imports came by way of Barcelona; the export trade went to Spain, France, Italy, Algeria, Cuba, and Puerto Rico.

Until a few years ago the Balearics represented just patches of land lying quietly on the expanse of the Mediterranean far from the tracks of the tourist industry. For the most part only Spaniards from the mainland went vacationing in Minorca or Majorca. Then other tourists sought out these interesting islands because of the cheapness of living there and the attractive scenery. Americans who were financially embarrassed during times of depression settled themselves and their families here where dollars could buy more luxury than in any other place in the world, and

as a result prices rose far out of reach of the poor islanders. Foreign people promenaded the streets in the scantiest of beach attire much to the amazement of the natives. Tea rooms, bars, restaurants, night clubs, florist shops, lending libraries, and travel bureaus were opened by foreign businessmen.

With the rise of Hitler there were rumors that some nations considered seizing the islands and as a result the islanders resorted to arrests, deportations, and special decrees. The tourists were thought to be forerunners of invasion. If a tourist-painter left the islands, he might be accused of having painted pictures of fortifications and coastlines; if a German built a swimming pool, he might be charged with constructing a depository for gasoline; if a Frenchman purchased a chalet, he might be indicted for spying on fortifications; if a Britisher bought a hotel, he might be accused of maintaining a military stronghold; if an American cruised in a boat, it was said that such a cruise was for no good purpose. Strict laws regarding visitors and lengths of visits were enforced. A tourist might stay several months, but if he desired to remain longer he must produce a good reason for staying and proof of good character; his source of income and morals were thoroly investigated; two Spaniards must then vouch for the innocence of his intentions. If all investigations proved to be favorable, the tourist might then apply for *certificado de recidencias*. Foreigners, however, were discouraged from leasing or purchasing property within the military zone which extends five miles back from the coast.

As of 1938, Italy and Germany built and occupied airdromes in strategic positions under the pretext of aiding Spanish rebels. Many military and naval forces of these countries planned bases for submarines, battle-craft, and troops.

Processions of mankind have made the islands the stepping stones in crossing from Africa to Spain and to the southern gateways of Europe. Carthaginians, Romans, Vandals, Normans, Arabs —all have passed here. No island or island group in the Mediterranean offers better protection for ships and planes. And now what will be their status in the post war world?

THE NATIONAL COUNCIL AT WORK

Next Annual Meeting

The next annual meeting of the National Council will be held at Columbus, Ohio, December 27, 28 and 29, 1946. Sessions will be held in Neil House, where living accommodations are also available. Ohio State University will be our host and all local arrangements are under the direction of Dr. Guy Harold Smith. As this is our first meeting since before the war we hope all interested teachers will attend. *Make your plans now.* Watch the JOURNAL for further announcements.

Publication of a New Professional Paper

The second report of the Committee on Standards of Certification for the Teaching of Geography in High Schools has been published as Professional Paper No. 7, *College Geography and its Relation to Teacher Training in Secondary School Geography.* Copies of this report will be sent to educators in all parts of the country. Anyone wishing a copy may secure one for twenty-five cents from the Chairman of the Committee, Alfred H. Meyer, Valparaiso University, Valparaiso, Indiana. The first report of the Committee was published as Professional Paper No. 6, *Standards of Certification for the Teaching of Geography in High Schools.*

The series of Professional Papers was initiated by George J. Miller, then Secretary of the National Council, by the publication in 1927 of the Report of a Committee on Geography in the Junior High School. Since then, an important activity of the Council has been the publication and distribution of Professional Papers to advance the place of geography in the schools of the country. The content of each paper has been a committee report, five of them dealing with geography in secondary schools.

Officers of Iowa and Ohio Councils

We are glad to announce the officers of three councils, all of which have been active groups for many years.

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Committee on Revision of the Constitution

The Committee on the Revision of the National Council Constitution is composed of the officers of the National Council and, in addition, Miss Alice Foster and Mr. George J. Miller. All members are welcome to request a copy of the present constitution from the Secretary and to send him suggestions for the new constitution.

KATHERYNE THOMAS WHITTEMORE, *President*

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West, Lee R., Colorado State College of Education, Greeley

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Dodge, Richard E., Connecticut State College, Storrs
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McQuillan, Veronica, 24 Windham St., Willimantic
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Strong, William M., Lewis High School, Southington
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King, Luther M., Box 289, Bagdad
Obryant, Violet, 6821 N.W. 4th Ave., Miami
Ogden, J. Gordon, 817 College Ave., Lakeland
Purcell, Doris, 734 McDonald St., Lakeland

Tulane, Lida, 1876 Coffee Pot Blvd., St. Petersburg
Wright, Mrs. L. Maude, 3910 S.W. 4th St., Miami 34

GEORGIA

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Neighbors, Jean, 570 Vineville Ave., Macon
Simpson, Ludie, Joseph E. Brown Junior High School, Atlanta

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Allen, May C., Kelly High School, 4136 S. California, Chicago 22
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Barton, Thomas F., Southern Illinois State Normal University, Carbondale
Bellis, Bertha, 594 Normal Road, DeKalb
Blanchard, W. O., 246 N.H. Building, University of Illinois, Urbana
Booth, Alfred W., University of Illinois, Urbana
Branom, Fred K., 10325 Leavitt St., Chicago 43
Buell, Irma, 506 Knox Place, Joliet
Buford, J. L., Box 423, Mt. Vernon
Burrill, Helen, 313 Sherman St., Joliet
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Condrey, Ralph S., Mt. Carmel Public Schools, Mt. Carmel
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Crompton, Mabel, 15 Payne Place, Normal
Crush, Mildred, Hinsdale Junior High School, Hinsdale
Cutshall, Alden D., University of Illinois, Urbana
Dunn, Helen, 115 M 77 St., Waterloo
Ewing, P. L., 6th and Langdon St., Alton
Fagan, Curtis H., 43 E. Jefferson Ave., Naperville
Fass, Eleanor, Ferry Hall, Lake Forest
Flemington, Adah, 2219 Maple Ave., Evanston
Foster, Alice, Rosenwald Hall, University of Chicago, Chicago
Foster, Mrs. Lucycella, 216 W. Orgara, Harrisburg
Friedlander, Sade G., Cr. Hyde Park High School, 6220 Stony Island Ave., Chicago
Garland, John H., 248 Natural History Bldg., University of Illinois, Urbana
Garver, Ruth, 342 N. Pine Ave., Chicago
Geillen, Marie E., 405 Blackhawk St., Chicago
Geppert, O. E., Denoyer Geppert Co., 5235 Ravenswood Ave., Chicago
Gould, William C., 595 Normal Rd., DeKalb
Gregoria, Sister Mary, Mundelein College, Sheridan Rd. at the Lake, Chicago
Gross, H. H., Concordia College, 7400 Augusta St., River Forest
Gueffroy, Edna M., 207 West Graham St., Bloomington
Hahn, Christine, 208 S. Union St., Dwight
Hale, Lucille M., 8251 S. Aberdeen St., Chicago 20
Hammond, H. Frank, Lafayette School, Hammond
Harris, Chauncy D., Department of Geography, University of Chicago, Chicago 37
Hays, John H., 108 N. Poplar, Carbondale
High, O. V., 12401 Maple, Blue Island
Hodges, Herschel, 414 W. Wheeler St., Macomb
Hopper, W.E.R., River Community High School, Wood River
Huck, Emilie, 543 W. Second St., Centralia
Hunsaker, Bertie A., Cobden
Jicha, Charles, 3655 W. Cermak Rd., Chicago 23
Johnson, Angela F., 916 Ainslie St., Chicago
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Kazmierzk, Constance, Calumet High School, 8131 S. May St., Chicago
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Kohn, Clyde F., Northwestern University, Evanston
Krausee, Annemaire, Southern Illinois Normal University, Carbondale
Krughoff, Mildred, Lincoln School, Moline
Kukral, Libbie, Maine Township High School, Dempster St., and Potter Rd., Des Plaines
Larsen, E. C., Argo Community High School, 63rd St., and 74th Ave., Argo
Lathrop, H. O., Illinois State Normal School, Normal
Lawson, Elizabeth, 700 Jordan, Mt. Vernon
Lefler, Mrs. Hazel, Rt. 1, Carterville
Lino, Frank, Volta School, 4950 N. Avers Ave., Chicago
Lohman, Edna, 806 5th Ave., Mendota
Marsh, Leta L., 24 Kaskaskia Apts., La Salle
Marie, Sister Clement, College of St. Francis, Joliet
Martin, Dorothy, Bloom Township High School, Chicago Heights
McDavitt, Neva, 304 W. Mulberry Ave., Normal
McGee, Jamie Lee, 1300 S. Thompson, Carbondale
Means, Margaret, 516 S. Clayton, Bloomington
Middleton, B. D., Box 1, Xenia
Miller, Albert H., St. John's Lutheran School, 125 N. Kensington Ave., La Grange
Mikesell, Ruth Weaver, 7311 Yates Ave., Chicago 49
Nessel, Dorothy E., Cuba
Parker, Edith P., 5705 Blackstone Ave., Chicago
Pietsch, C., 6029 South Kimbark Ave., Chicago 37
Platt, R. S., University of Chicago, Chicago
Prange, James W., Lawrenceville Twp. High School, Lawrenceville
Puder, Miss E. M., 7210 Princeton Ave., Chicago
Reichert, E. C., Elm Peace School, 233 N. Sheridan Rd., Highland Park
Ridgley, D. C. 516 S. Clayton, Bloomington
Schmidt, Clara J., 7216 Lafayette Ave., Chicago 21
Schneider, Ruth M., 320 E. High St., Farmer City
Shank, Marjorie, Southern Illinois Normal University, Carbondale
Sielbeck, Mrs. Virginia R., 304 W. Mill, Carbondale
Simpson, Jewell, Ullrich School, Broadway and Orchard, Decatur
Smith, Hulah B., 609 S. State St., Champaign
Sommers, Hobart H., Austin High School, 231 No. Pine Ave., Chicago 44
Sorenson, Clarence Woodrow, 1314 E. 56th St., Chicago
Spiers, LaVonne, Edwards School, 211 North St., Normal
Stenger, Stella M., 312 S. Illnois St., Belleville
Taylor, Florence, 6200 Dorchester, Chicago 37
Tillman, A. G., Western Illinois State Teachers College, Macomb
Trager, Louise M., Lakeview High School, 4015 N. Ashland, Chicago 13
Turner, Helen S., 212 S. Oak Park Ave., Oak Park
Van Hise, I. N., 6426 Kenwood Ave., Chicago
Van Sellar, Maratha, 211 S. Central Ave., Paris
Veal, Jane D., J. Sterling Morton High School, Cicero, 50
Welch, Philip, General Delivery, Christopher
Wheeler, Estelle, 411 Peoria Ave., Peoria
Wiegman, Catherine, 120 W. Mazon, Dwight
Zeller, Rose, 1435 6th St., Charleston

INDIANA

Alcorn, Mrs. Charles E., 1297 S. Emerson, R.R. 9, Box 60, Indianapolis 44
Bucklew, Richard, 822 23rd St., South Bend
Bradford, Ruth M., 124 N. Washington, Marion
Cobler, Lois, 301 W. King, Garrett
Dernbach, Helen, 228 So. St. Joseph, South Bend
Finney, John C., 2920 Columbus Ave., Anderson
Gwinn, Opal, 1518 Grand Ave., New Castle
Hanes, Vivian, 1406 Lawndale, Indianapolis
Hull, Pamona M., 1301 Harrison St., Elkhart
Hurlbut, Floy, Ball State Teachers College, Muncie
Joseph, Sister Mary Edward, St. Mary's College, Notre Dame, Holy Cross
Kendrick, Cecil B., 803 W. 6th, Anderson
Koch, David, Indiana State Teachers College, Terre Haute

Kroph, Glenn S., James Riley High School, South Bend
Lange, P. W., 524 Garfield St., Gary
Lincicome, Laura, 411 W. 8th Ave., Gary
Meyer, Alfred H., Valparaiso University, Valparaiso
Moengen, Anna, 124 One Half Sibley St., Apt. 32, Hammond
Murphy, Marguerite, Washington High School, South Bend 19
Peart, Gilbert, 1208 Broadway, Anderson
Quinzoni, Margaret, 2215 West Washington, Indianapolis 8
Reimold, Crissie E., Henry Studebaker School, 1700 Marietta St., South Bend 14
Scantland, Minta, Worthington
Stantz, Guy, Gerstmeyer Technical High School, Terre Haute
Sturgeon, Bertha, 113 17th St., Logansport
Switzer, J. E., 523 S. Park Ave., Bloomington
Taugher, Mary B., 308 S. Fifth St., Vincennes
Todd, Minnie Belle, 612 W. 22nd St., Anderson
Ulery, C. B., 730 N. Meridan St., Indianapolis 7
Visher, Stephen S., 817 E. 2nd St., Bloomington
Wagner, Alma, Dennis Junior High School, Richmond
Washburn, Mabel, Shortridge High School, Indianapolis
Whittern, Noel H., 2126 Kentucky Ave., Ft. Wayne 3
Younger, Alea B., R.R. 3, Bedford

IOWA

Aitchison, Alison E., Iowa State Teachers College, Cedar Falls
Austerud, Stella, Wartburg College, Waverly
Beecher, Mary E., Traer Public School, Traer
Campbell, Eldred E., Woodbine
Crow, Alice, Correctionville Public School, Correctionville
Frances, Sister Mary Jane, Mount St. Clare Library, Clinton
Gertrude, Sister Mary, Briar Cliff College, Sioux City 17
Gronstal, Wilma, Lincoln School, Waterloo
Hayek, Bess, Monroe Hotel, Grinnell
Howar, J. W., 812 N. 11th St., Centerville
Inman, J. R., Red Oak
Kirchner, Alvina, 414 First Ave. W., Newton
Lepley, Gwendolyn, Box 107, Union
Maloney, Ruth E., 417 S. 8th St., Chariton
Mueller, Mrs. Wilma, 701 West 3rd St., Muscatine
Pierson, Lula, 600 North Buxton St., Indianola
Rayl, Cleo, 501 Linn St., Atlantic
Reidel, Alice M., 725 Washington St., Waterloo
Schaefer, Fred Kurt, State University of Iowa, Iowa City
Uttley, Marguerite, Iowa State Teachers College, Cedar Falls
Winter, Ella June, 1027 N. Carroll St., Carroll
Yoder, Lee O., Drake University, Des Moines

KANSAS

Aubry, Alice E., 212 E. Cottonwood, Independence
Bert, Mrs. Ada N., 718 S. 8th St., Neoesha
Buzzard, G. A., 1517 Rural, Emporia
Collins, Joseph H., Northeast and Junior High School, Fourth and Troup Ave., Kansas City 2
Deere, Emil O., Bethany College, Lindsborg
Fisher, Mrs. Harriett Hull, 921 North Taylor St., El Dorado
Gilson, Rena, Russell
Haws, Nina, 315 N. Lorrain, Wichita 8
Holt, Etelka, Pittsburg
Kauffman, Melva, Hesston College, Hesston
Massey, A. K., Hays Junior Senior High School, Hays
Miller, Roberta, 1104 N. 19th St., Kansas City
Starlin, Grace, Newton Jr. High School, Newton
Stowell, Mrs. Marguerite, Russell High School, Russell
Wunderlich, L. C., St. Johns College, Winfield

KENTUCKY

Braun, Catherine L., Box 173, Morehead
Case, Mary G., Holmes Junior High School, Covington
Edwards, F. L., College St., Smiths Grove
Hafer, Wanda Lee, 732 Oak St., Ludlow
Hatcher Halene, Murray State Teachers College, Murray
Irmina, Sr. M., Villa Madonna College, 116 E. Twelfth St., Covington
Marks, Mary, Western Kentucky State Teachers College, Bowling Green
Riley, Oni, Route 1, Walton
Stephens, Mary, Box 563, Independence

LOUISIANA

Bankston, Frank H., College Station, Hammond
Chatterton, H. J., 217 Cherry St., Lafayette
Mott, Mrs. Joe, Oak Ridge

MAINE

McKay, Edgar B., Winslow High School, Waterville

MARYLAND

Barnhart, Mrs. Eleanor L., Frederick High School, Frederick
Blood, Pearl, State Teachers College, Towson
Burgess, Alvin V., 4301 Shamrock Ave., Baltimore 6
Dambaugh, Mrs. Luella N., 42 F. Crescent Rd., Greenbelt
Diehl, Ivan C., Box 67, Frostburg
Diehl, Lee A., McDonogh School, McDonogh
Feldman, Rossetta A., Forest Park High School, Chatham Rd., and Eldorado Ave., Baltimore 7
Lawyer, Irma G., Westminister High School, Westminister
Mason, C. W., Prince Frederick
Milburn, Elinor H., 102 Connecticut Ave., Kensington
Odell, C. B., 8411 Woodcliffe Court, Apt. 202, Silver Spring
Phillips, B. H. Jr., Washington High School, Princess Ann
Wells, Mary E., Forest Park High School, Chatham Rd. and Eldorado, Baltimore 7

MASSACHUSETTS

Atwood, Wallace W., Clark University, Worcester
Boucher, Irene R., 334 Clarendon St., Fitchburg
Burnham, Guy H., 19 Woodman Rd., Worcester 2
Corfield, George S., State Teachers College, Worcester 2
Coyne, Grace E., Dwight School, West Springfield St., Boston
Crowther, Clifford T., 285 Columbus Ave., Boston 16
Driscoll, Alice, Teachers College, Boston
Ekblaw, W. Elmer, The Homelands, North Grafton
Fuller, Milton L., Central Grammar School, Gloucester
Gardner, Helen, 12 Reservoir St., Lawrence
Gordon, Zelda J., 17 Dix Street, Winchester
Kepner, Tyler, High School, Brookline 46
Lloyd, Trevor, 566 Pleasant St., Worcester
Long, Arthur C., 1577 Centre St., Roslindale
Lyman, W. B., 39 Walnut St., Stoughton
Mank, Helen Gardner, 12 Reservoir St., Lawrence
McCarthy, George J., 681 Broad St., East Weymouth 89
McKelvey, H., Lincoln Public Schools, Lincoln
Meredith, Violet I., 131 Dudley St., Roxbury
Mrose, Mary E., 42 Prosper St., Malden
O'Donnell, Helen B., 51 Salem St., Fitchburg
Packard, Leonard O., 78 Warren St., Needham
Parker, Margaret T., Wellesley College, Wellesley
Pratt, Jessie C., Brockton High School, Brockton
Raisz, Erwin J., 2 Divinity Ave., Cambridge
Simmons, Anna E., State Teachers College, Fitchburg
Sylvester, Rovena M., 19 Engleside Ave., Chelsea

Thurber, Clara M., The Lesley School, 29 Everett St., Cambridge
Tolman, Ellen D., 101 Millbury St., Auburn
Wallace, Mrs. G. Edmund, 61 Western Ave., Westfield
Warman, Henry J., 3 Sun Valley Dr., Worcester
Whittlesey, Derwent, 2 Divinity Ave., Cambridge 38
Woodward, Annie C., Summerville Senior High School, Summerville 43
Yates, Everett C., 283 Walnut Ave., Roxbury

MICHIGAN

Albert, Sister Mary, Siena Heights College, Adrian
Babcock, Carl, Grand Haven
Belthuis, Lyda, 1547 Granges St., Ann Arbor
Berry, William J., Western Michigan College, Kalamazoo
Birdshell, A. J., 503 Hilbert St., Kalamazoo
Boot, Anna W., 18 E., 13th St., Holland
Bowers, Neal M., Michigan State Normal College, Ypsilanti
Boyington, Gladys, Roosevelt School, Ypsilanti
Boyles, Irene, 216 Jones, Lansing 12
Clark, Fred R., 528 So. Warren Ave., Big Rapids
Dionysia, Sister M., Nazareth College, Nazareth
Donley, Richard C., Big Rapids Public Schools, Big Rapids
Donner, Ruth E., 312 S. Elm St., Three Oaks
Erickson, Arthur G., Ecorse High School, 4165 Seventh St., Ecorse
Gibson, Beatrice, 903 Iron St., Norway
Greenhoe, Vivian S., Manistee High School, Manistee
Halverson, Lynn H., 606 W. College, Marquette
Hanratta, Ann, Rt. 3, St. John's
Harrison, Lucia C., 211 Woodward Ave., Kalamazoo 47
Kerr, Sara C., 3045 Blaine, Detroit 6
Kester, Alice Cleone, Central High School, Belding
Knight, Homer, Royal Oak High School, Royal Oak
Logan, Marguerite, 808 W. Lovell, Kalamazoo 46
McPhilimy, Robert W., 1841 18th St., Wyandotte
Mellor, Laura B., J. W. Sexton High School, Lansing 15
Morrison, Nettie M., 779 Territorial, Benton Harbor
Padgett, Marian, 606 Colfax, Benton Harbor
Prince, Laura M., Lake Linden Hubbell Public Schools, Lake Linden
Schreiber, Mr., McKenzie High School, 9275 Wyoming, Detroit 4
Stewart, Harold E., Wayne University, Detroit
Straw, H. Thompson, Western Michigan College, Kalamazoo
Van Gines, Mrs. Lucy, 736 Sanford St., Muskegon Heights
Wakeman, Jessie, 103 West Main, Sturgis
Wyant, Helen I., Ironwood

MINNESOTA

Bahnsen, Clara, Lincoln Junior High School, Duluth
Bennett, Edith May, School Dist. No. 1, Grand Rapids
Beug, Hilda, 126 Coy St., Mankato
Brown, Ralph H., University of Minnesota, Minneapolis
Buckbee, Elizabeth, 2716 Humboldt Ave., Minneapolis
Buck, Helen, 917 E. Howard St., Hibbing
Damasia, Sister M., 211 Third St., N.W., St. Raphael School, Montgomery
Davenport, Emelyn, Nashwauk
Estrabrook, Theodore, Faribault High School, Faribault
Ewy, Mrs. Grace, 17 South Jefferson St., New Ulm
Graves, Ethel, 1542 Kilian Blvd., St. Cloud
Hobart, Margaret, Byron & Pleasant Sts., Mankato
Helene, Sister Joseph, 705 12th Ave., S.E., Minneapolis 14
Husby, Hedwig, 621 N. Labree, Thief River Falls
Korgen, Mali, 1919 E. 3rd St., Duluth 5
Larson, Anna C., 418 4th Ave., S., St. Cloud
Miller, George J., State Teachers College, Mankato
Morton, Mrs. Eunice B., Hill City
Nichols, Ray J., LeCenter
Norlin, Carl, 3016-16th Ave., So. Minneapolis

Peterson, Mrs. Florence N., 2305 W. 5th St., Duluth 6
Shaw, Mary Gwen, State Teachers College, Mankato
Sletten, Cora P., State Teachers College, Mankato
Stadhem, Stella R., 5742 S. Colfax Ave., Minneapolis 9
Swanson, Ruth F., Helen St., R.R. 7, North St. Paul 9
Teppen, Roy H., 722 13th Ave., Duluth 5
Wall, Nancy W., 117 8th, Cloquet
Wirth, J. W., 862 E. 5th St., Paul 6

MISSISSIPPI

Carpenter, T. Howard, Cascilla Consolidated High School, Cascilla
Milner, Bessie, East Ward School, Gulfport
Myers, M. W., Box 115, State Teachers College, State College
Osborne, M. E., Jackson Public Schools, Jackson

MISSOURI

Aldrich, Cassie, Senior High School, Popular Bluff
Allen, Mildred K., Webster Groves High School, Webster Groves
Aschemeyer, Esther, 4449 Floriss Place, St. Louis 15
Balk, Helen H., 3 South Williams St., Columbia
Branom, Mendel E., 3853A Detonty St., St. Louis 10
Cowan, James R., 3845 McGee St., Kansas City 2
Ekblaw, Sidney E., University of Kansas City, Kansas City
Fletcher, Merna Irene, 110 Hitt St., Columbia
Harris, Ralph S., 5607 Garfield Ave., Kansas City
Hazelton, Ruth L., 415 No. Main, Mountain Grove
Shearer, M. H., 6100 Charlotte St., Kansas City 4
Stagner, W. Lowell, Wentworth Military Academy, Lexington
Stroszer, Adah Lee, 108 E. Cedar, Webster Groves 19
Thomas, Lewis F., Washington University, St. Louis
Wood, Mabel, 6121 Westminster Place, St. Louis 12

NEBRASKA

Andersen, Olga A., 1902 Ave. B., Scottsbluff
Anegella, Sister M., Sacred Heart High School, 2123 Binney St., Omaha
Barber, Mrs. Robert, Cr. Elmer G. Balderson, Cortland
Bengston, Nels A., University of Nebraska, Lincoln 8
Clark, Rose B., 2535 N. 49th St., Lincoln
Crosbie, Milo H., Nebraska Central College, Central City
Hansen, Carrie C., 510 N. Lexington Ave., Hastings
Hellwege, Walter, Concordia Teachers College, Seward
Lackey, E. E., 3303 R. St., Lincoln
Mitchell, Edna M., South 4th, Hebron
Nelson, Evelyn Leeita, 306 W. West Second, North Platte

NEW HAMPSHIRE

Bozarth, Ruth O., Teachers College, Plymouth
Keene, Ella O., Keene Teachers College, Keene
O'Connor, Anna R., 580 So. Main St., Manchester
Saunders, Edna N., 75 Lincoln St., Laconia

NEW JERSEY

Barton, Edwin M., 217 City Hall, Elizabeth 4
Beyer, Lena M., New Jersey State Teachers College, Jersey City
Brenner, Mark, Junior High School, Bridgeton
Darrohn, Helen I., Parkway School, Trenton
David, Virginia Lee, 326 Gardner Ave., Trenton 8
Davison, Mary E., Box 222, State Teachers College, Trenton
Cummings, Eleanor E., 104 W. High St., Somerville
Fisher, Gilmore J., No. 1903 Pennington Rd., Trenton 8
Green, Vivian J., Box 287, State Teachers College, Trenton
Hankins, Grace Croyle, 1407 Kaighn Ave., Camden
Hoagland, Ada May, Chatham Public School, Chatham
Hornor, Virginia, 601 Sheridan Ave., Plainfield

Hubschmitt, Lily M., 305 Rock Road, Glen Rock
Kallfetz, Margaret, Box 359, State Teachers College, Trenton
Race, Janet E., State Teachers College, Trenton
Rogers, William N., Box 556, State Teachers College, Trenton
Rossman, Ruth M., State Teachers College, Trenton
Shannon, Edith R., 65 Glen Ave., Glen Rock
Smith, Elmer F., Robert Gordon School, Grant and Locust St., Roselle Park
Theoharis, Mary L., Box 676, State Teachers College, Trenton 5
Thompson, Winifred, 223 W. Palisade Ave., Englewood
Wilson, Alice, Box 725, State Teachers College, Trenton
Wilson, Mrs. Marietta C., 49 W. Fourth, Florence

NEW MEXICO

Bybee, Eula, Box 329, Roswell
Robertson, Ina Cullom, 826 Kent Ave., Albuquerque

NEW YORK

Aronson, Helen S., 851 E., 23rd St., Brooklyn 10
Belden, Mabel, Keuka College, Keuka Park
Berman, Ira B., 0862947, Headquarters 18th Bomb GRP, APO 390 Cr. Pm, New York
Bogart, Harold E., 378 Congress Ave., East Williston
Bowmar, Stanley, 2067 Broadway, New York 23
Burlingame, Mrs. Elizabeth, Worcester
Charlton, Donald T., 100 22 196th St., Hollis 7
Cochran, Warren B., Friends School, 112 Schermerhorn St., Brooklyn 2
Conkling, Alys F., Silver Burdett Co., 45 East 17th St., New York
Crowley, Anastasia M., 6126 Spencer Ave., Riverdale, Bronx 63
Darkenwald, Gordon, Hunter College, 695 Park Ave., New York
Delaney, John, State Teachers College, Oneonta
Downs, Margaret B., 112 13 72 Dr., Forest Hill, L.I.
Epstein, Jacob, 1587 Lincoln Pl., Brooklyn 33
Esler, Mrs. Ella G., 209 Columbia Ave., Syracuse 7
Finkelstein, Mary E., P.S. 148 Queens, 89 02 32nd Ave., Jackson Heights
Fish, Olive C., 2 Calvert St., Cortland
Fuller, Kenneth A., 216 Pine St., Lockport
Gilkeson, Mrs. Elizabeth C., Poughkeepsie Day School, Poughkeepsie
Gluck, Harold, Taft High School, 172nd St., and Morres Ave., Bronx
Goodman, David J., Young American Films Inc., 32 E. 57th St., New York 22
Gould, Clifford M., 155 Delaware Rd., Kenmore 17
Greenleaf, Peter, 149 Kenilworth Pl., Brooklyn
Hannon, Estelle G., 317 W. 18th St., New York 11
Harrison, Richard Edes, 22 W. 48th St., New York 19
Hart, Bess R., 1041 Nelson Ave., New York 52
Hart, Isabelle K., State Normal College, Oswego
Hayes, James L., St. Bonaventure College, St. Bonaventure
Hitzel, Beulah C., 49 E. Parade Ave., Buffalo
Jansen, William, 110 Livingston St., Brooklyn 2
Jones, Julia B., 88 Berwyn Ave., Buffalo 15
Kaikow, Julius, College of the City of New York, Convent Ave., and 139th St., New York 31
Kishman, Mrs. Ursula, 4001 Milton Ave., Solvay 7
Klue, Harold E., Riverdale Country School, Riverdale on Hudson, New York 63
Kuthy, Olga, Hunter College, 695 Park Ave., New York
Lamson, Genieve, Vassar College, Poughkeepsie
Lason, Catherine E., East Syracuse Schools, East Syracuse
Long, Harold M., Glen Falls High School, Glen Falls
Long, Ensign Harriet Ruth, USNR, 177 Roebling Ave., Buffalo 15
Loveland, Gilbert, Henry Holt and Co., 257 Fourth Ave., New York 10
Lux, (Miss), The Spence School, 22 E. 91 St., New York 28
McClaury, Ella M., New Platz
Marcus, Evelyn B., 11 Northminister Dr., White Plains
Marie, Sister Irene, D. Youville College, Buffalo 1
McWenie, Mary Winnis, Box 542, Port Washington

Mildred, Sister, St. Mary's Seminary, 564 Franklin St., Buffalo 2
Naylor, A. H., Port Jervis Public School, Port Jervis
O'Rourke, Rev. Fipdelis, St. Bonaventure College, St. Bonaventure
Panuska, Frank C., Stuyvesant High School, 345 E. 15th St., New York
Rauch, Magdalen, 2229 Powell Ave., New York 61
Renner, George T., Teachers College, Columbia University, New York City
Ristow, Walter W., 152 East 84th St., Apt. 4 G., New York
Roberts, M. Catherine, Potsdam State Teachers College, Potsdam
Ruthledge, M. P., Brooklyn Ethical Culture, 49 and 50 Prospect Park, Brooklyn
Sanchez, Marcela, Whittier Hall, Columbia University, 1230 Amsterdam Ave., Box 37, New York 27
Schneider, Noreen, 80 Indian Rd., Port Chester
Schwartz, B. R., 260 Lenox Rd., Brooklyn
Schwarzbach, B. L., 334 Hollywood Ave., Douglaston 1, L.I.
Stokes, (Mrs.) Ida B., Oakwood School, Poughkeepsie
Swartz, David J., 900 Grand Concourse, Bronx
Svec, M. Melvina, State Teachers College, Buffalo 9
Taylor, Wallace W., New York State College for Teachers, Albany 3
Tuthill, Richard L., 509 W. 121st St., New York 27
Vaughn, Ada M., 154 Radford St., Yonkers
Walls, Lucille G., Herkimer High School, Herkimer
Wellnitz, Anna M., Brooklyn College, Bedford and H. Aves, Brooklyn
Whittemore, Katheryne T., State Teachers College, Buffalo 9
Wood, Mabel, 100 Park Dr., East Greenbush

NORTH CAROLINA

Arundel, Edna, Woman's College of the University of North Carolina, Greensboro
Browne, W. A., Teachers College, Greenville
Lemert, Ben F., Box 4755, Duke University, Durham
Snipes, Mrs. Annie Herring, 1805 Chestnut St., Wilmington

NORTH DAKOTA

Blythe, Hettie, State Teachers College, Valley City
Selke, Arthur C., State Teachers College, Dickinson

OHIO

Antl, Loretta M., American Education Press, 400 S. Front St., Columbus
Beavan, Mayme, 333 Cedar Ave., Steubenville
Blouch, Adelaide B., 1244 French Ave., Lakewood
Bowser, Mary H., 265 Haymaker Ave., Warren
Broomhall, Lena, 877 Brighton Blvd., Zanesville
Buhrow, Ida, 5717 Phillips Ave., Sylvania
Coates, Luella M., 315 W. Lincoln St., Findlay
Combs, Grace, R.D. 4, Springfield
Cooper, C. E., Box 385, Athens
Culler, Lelah E., 2903 Lee Rd., Silver Lake, Cuyahoga Falls
Danklefsen, Western Reserve University, Cleveland 6
Dow, C. L., 45 Maplewood, Athens
Downey, Alvira, 529 Maxwell Ave., Steubenville
Eisen, Edna E., 126 Wilson Ave., Kent
Frank, Ralph, 411 10th St., N.E., Massillon
Frost, Reuel B., Oberlin College, Oberlin
Gregory, W. M., 2458 Queenston Rd., Cleveland
Hobson, Maude, 1619 Ohio Ave., Youngstown
Howser, Elma B., 325 Franklin St., Marion
Johnson, Martha, 335 W. Walnut St., Hillsboro
Jones, Edward W., 1252 Dayton St., Akron
Keller, Lois R., 3832 E. Fairfax Rd., Cleveland Heights, 18
Kenney, Lucille, 1264 Manor Park, Lakewood
Kerr, Harriet, 763 Sandusky St., Ashland
Kiefer, George L., 1918 Princeton Dr., Toledo 9
Kieran, Sister Mary, St. Elizabeth's Hospital, Youngstown
Kistler, Alice B., 512 Center St., Findlay

Kirk, O. B., Jesup W. Scott High School, Toledo 10
Maddox, Joseph T., 22631 Seabrooke Ave., Euclid 17
Maharry, John, 7042 Marinthiana Ave., Youngstown 5
Marie, Sister Bernadette, Julienne High School, 325 Homewood, Dayton 5
Martin, Mrs. Maud C., 2475 Norfolk Rd., Cleveland Heights.
McConnell, W. R., 402 E. Withrow Ave., Oxford
Meyer, Lydia, 50 W. Weber Rd., Columbus 2
Meyer, Mrs. Mabel, 587 Washington St. N.E., Warren
Michael, Sister M., c/o St. Joseph's Academy, 3430 Rocky River Dr., Cleveland 11
Mitchell, J. A., Champion Junior High School, Columbus 3
Mintier, Wilma, 2802 Idlewood Ave., Youngstown 7
Moses, C. F., Muskingum College, New Concord
Novotony, Lillian, 4305 E. 126th St., Cleveland
Parks, Aletha, 3763 Grovedale Pl., Cincinnati 8
Peebles, Arthur, 2355 Second St., Cuyahoga Falls
Peters, Adelle C., 3359 Milverton Rd., Shaker Heights.
Pease, Carrie D., 111 Forest St., Oberlin
Rasner, Zola Mae, 2491 Sullivant Ave., Columbus
Richeson, Mrs. Dena H., 307 Perkinswood Blvd. S.E., Fredericksburg
Runkle, Evelyn, R. 1, Kinsman
Saletell, L., University of Dayton, Dayton
Shatzer, C. G., 1003 Woodlawn, Springfield
Smith, Guy Harold, Ohio State University, Columbus
Smith, Villa B., 2104 Stearns Rd., Cleveland 6
Thurtle, Virginia, 2257 Coventry Rd., Cleveland Heights. 18
Van Cleef, Eugene, Ohio State University, Columbus
Vonkaenel, H. A., Ottoville Schools, Ottoville
Wallace, Ruth, 1433 Churchill Rd., Lyndhurst
Welshimer, Pauline, 314 Williams Rd., Bellefontaine
Weston, Evelyn G., 332 Tallmadge Ave., Cuyahoga Falls
Wildpret, Thelma E., 1123 Wellesley Ave., Steubenville
Wilson, W. Harmon, South Western Publishing Co., 201 W. Fourth St., Cincinnati 2

OKLAHOMA

Bollinger, C. J., 725 Chautauqua, Norman
Hardy, Mrs. Ruth, Pauls Valley High School, Pauls Valley
Harrel, Gordon M., East Central State College, Ada
Keso, Edward E., University of Oklahoma, Norman
Martin, Robert L., Central State College, Edmond
Mason, Carol Y., 1131 S. College, Tulsa 4
Sellers, Valta, 210 W. 11th, Bristow

OREGON

Hicks, Box 356, Condon
Mildred, Mother M., St. Josephs Academy, Pendleton
Patton, Fred J., La Grande Public Schools, La Grande
Robinson, Houston, Klamath Union High School, Klamath Falls
Roubal, Mrs. Irene, 325 N. Church St., Silverton
Vandel, Mrs. Mary E., 237 E. 6th, Albany
Young, Mrs. Marvel B., Rt. 1, Box 498, Medford

PENNSYLVANIA

Antonillo, Sister M., Holy Family Teachers Training School, Torresdale Grant and Frankford Ave., Philadelphia 14
Barr, Anna M., 44 La Clede St., Pittsburgh 11
Bassler, Harry M., 144 E. James St., Lancaster
Bernd, Kathryn M., Kutztown
Billingsley, Leora, Senior High School, E. North St., Butler
Broadhead, Leone E., State Teachers College, West Chester
Cashdollar, Doella M., Box 254, Penn
Dreisbach, Dodson, 25th & Filbert St., Mt. Penn., Reading
Eachus, Ethel Y., Smedly Junior High School, Chester
Elliott, Harriet A., State Teachers College, West Chester

Ewing, Ruth, 27 S. 13th St., Indiana
Foreman, Margaret M., 737 Irvington Pl., Chester
Fountain, Lawrence F., State Teachers College, Lock Haven
Garman, A. K., Elizabethtown Boro School Dist., Elizabethtown
Gilland, Mrs. Erna Grassmuck, California
Glass, Elizabeth F., 2507 Graham Blvd., Pittsburgh 21
Gresh, Mrs. Mary E., Cor. 4th Ave. and Franklin St., West Reading
Griess, Mrs. Phyllis R., 207 Lane Apts., State College
Grove, Martin A., 6138 Carpenter St., Philadelphia 43
Hanson, Frances M., Cathedral of Learning, University of Pittsburgh, Pittsburgh 13
Harding, G. E., R.D. 1, West Brownsville
Hawkey, Ada M., 455 Franklin Ave., Aliquippa
Hays, Eleanor L. Rt. 1, Box 37, Emleton
Heck, Mrs. Lillian, West End School, New Castle St., Butler
Hedge, John W., Broughal Bldg., Bethlehem
Hendrickson, Helga, 924 E. 29th St., Erie
Hepler, Hannah, Lincoln High School, Ellwood City
Herr, Elizabeth, Box 154, Willow St.
Hunt, Fred A., Sherwood Lodge, Hardies Rd., Gibsonia
Hyatt, Morna, The Academy of the New Church, Bryn Athyn
Iiams, Melverne, 600 Doyle Ave., West Homestead
James, Anna P., Glen Mills Rd., Glen Mills
Johnson, Nora D., Fayette County, New Salem
Kauffman, Verna, R.D., Box 143, Roaring Springs
Keithan, Elizabeth F., 340 Market St., Sunbury
Kershner, Grace M., 520 E. Arch St., Pottsville
Kilheffer, Esther M., 408 Pearl St., Lancaster
Klingensmith, Beatrice, 1128 Macon Ave., Pittsburgh
Kuhner, C. A., 120 8th Ave., Clarion
Lauffer, George F., Shippenville High School, Shippenville
Lemaire, Minnie E., State Teachers College, East Stroudsberg
Lewis, Harland, 300 Swissvale Ave., Edgewood 18
Linehan, Urban J., University of Pittsburgh, Pittsburgh 13
Lintner, L. B., Mt. Olive Public School, Hays and Ormsby Ave., Pittsburgh 10
Maria, Sister Aida, St. Mathews Library, Conshohocken
MacLaughlin, Virginia E., 825 N. 64th St., Philadelphia 31
May, J. Russell, 2615 Plum St., Erie
McCormick, G. A., Beaver Borough Schools, Beaver
McCoy, Grace, 428 W. Fourth St., Lewistown
Meyers, Mrs. I. Vernon, Wyomissing High School, Wyomissing
Mimich, E. Willis, Church Rd., Warnersville
Minnig, Clara, 414 E. 33rd St., Erie
Myers, Clara A., Biglerville
Nancarrow, Sara, Plymouth Junior High School, Plymouth
Netting, M. Graham, University of Pittsburgh, Pittsburgh 13
Newhouse, Lucille, 1005 Locust St., McKeesport
Nixon, R. B., Radnor High School, Wayne
Noble, Wm. E., Claysville High School, Claysville
Pero, Dorothy, Box 253, Wilmerding
Phillips, Mary Viola, 661 Catalpa St., New Kensington
Puff, Margaret, 107 Hickory St., Butler
Raffensperger, E. W., 684 Washington Ave., Upper Darby
Ridington, Thomas T., 349 E. Main St., Landale
Roberts, Florence E., 143 Ridge Ave., New Kensington
Russell, H. Harrison, 380 E. Third St., Bloomsburg
Russell, Marie, High School Building, East Pittsburgh
Schauer, Virginia, 802 California Ave., Pittsburgh 2
Schneider, Annie E., South Fayette Township Schools, Morgan
Shawkey, Ada M., 455 Franklin Ave., Aliquippa
Shryock, Clara M., Cambria County, Wilmore
Smith, Roger B., 19 N. Pine St., Lewistown
Stahlman, Mrs. R. W., R.D. No. 2, Franklin
Stanley, Jane L., Institute Hill School, Eau Claire St., Butler
Stewart, Mrs. Orphia, 37 S. High St., West Chester

Stout, Cyril L., State Teachers College, Mansfield
Tannehill, Eunice L., 442 Jackson St., Rochester
Thralls, Zoe A., University of Pittsburgh, Pittsburgh
Walker, Allene, 307 Locust Ave., Washington
Wildrick, John R., Portland
Wilfrid, Sister M., 3333 5th Ave., Pittsburgh
Williams, Frank E., University of Pennsylvania, Philadelphia
Wills, Mrs. Austin, 210 W. Green St., Connellsville
Wunsche, Wm. J., 815 13th Ave., Prospect Park
Yeager, Mary C., 145 E. Pomfret St., Carlisle
Zink, Norah E., State Teachers College, Indiana

RHODE ISLAND

Brown, Robert M., Alfred Drowne Rd., W. Barrington
Jensen, J. Granville, Rhode Island College of Education, Providence

SOUTH CAROLINA

Lawson, Mary C., 220 W. Bartlette St., Sumter
Raleigh, Vera V., Box 36, Winthrop College, Rock Hill
Tuttle, Elsie, North Greenville Junior College, Tigerville
White, J. Warren, 206 E. North St., Greenville

SOUTH DAKOTA

Noteboom, Charlotte M., University of South Dakota, Vermillion

TENNESSEE

Corley, Lavella, 119 Elm St., Martin
Hodgson, Julia, D 6 Jefferson Apts., Nashville 5
Law, Harry L., 912 Richardson St., Clarksville
Newman, Walter P., Route 3, Corryton
Whitaker, J. Russell, Peabody College, Nashville 4
Yoakley, Ina, 820 W. Maple St., Johnson City

TEXAS

Becker, Eugenia, 110 N. Marlboro, Dallas 11
Butler, W. H., 6401 Butler Dr., Rt. 7, Box 575, Dallas 6
Campbell, Mary Kate, 801 Van Buren, Amarillo
Carroll, May, 6035 Bryan Parkway, Dallas
England, Byron, El Paso Public Schools, 100 W. Rio Grande St., El Paso
Gibson, Margaret, 4001 Miramer Ave., Dallas 5
Grigsby, Sarah G., 2508 McKinney Ave., Dallas
Knispel, Minnie, San Marcos
Maloy, Mrs. Artie May, Haskell
Measamer, M. B., Sam Houston State Teachers College, Huntsville
Parker, Mrs. Ethel, 2403 Clarinda, Wichita Falls
Petty, Mrs. Alice B., 1321 7th St., Corpus Christi
Porter, R. H., The Steck Co., Austin
Reavis, Rebecca, 4914 Worth St., Dallas 14
Walker, Darthula, West Texas State Teachers College, Canyon

UTAH

Coffman, W. Elma, Brigham Young University, Provo

VERMONT

Drew, Florence E., State Normal School, Lyndon Center
Homeister, Mrs. Harry C., South Ryegate

VIRGINIA

Bright, Nelle, 1011 Spruce St., Norton
Buford, Florence, Clark Elementary School, Charlottesville
Cole, Ora Lee, McGuffey Elementary School, Charlottesville

Duncan, Owen J., Jefferson High School, Charlottesville
Dupuy, Mrs. Catherine L., Volens High School, Nathalie
Hanson, Raus M., 759 S. Mason St., Harrisonburg
Harwood, Ernest M., 1750 Preston Rd., Alexandria
Hoover, Edith G., Marion College, Marion
Kesseli, John E., 2505 Lee Blvd., Arlington
Lemons, Hoyt, 6257 18th St., N., Arlington
Meigs, Peveril, 6040 Wilson Blvd., Arlington
Moran, Sarepta A., Venable Elementary School, Charlottesville
Starkey, Otis P., Apt. 205 A. 20 Old Glebe, Arlington

WASHINGTON

Carstairs, Margaret, 1115 E. 43rd St., Seattle
Engleswick, Neva, Prosser
Knight, Mary E., Garfield High School, 23rd and E. Jefferson, Seattle 22
Martin, Howard H., University of Washington, Seattle
Nagley, John H., Box 773, Eatonville
Thiessen, Anne W., Box 722, Chehalis

WEST VIRGINIA

Carman, Lona M., Junior High School, Wellsburg
Hickman, Roy T., Concord College, Athens
Locke, Grace, 106 Creel St., St. Mary's
Seagrave, Rachel E., Storer College, Harpers Ferry
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WISCONSIN

Bradbury, Leavelva M., State Teachers College, Oshkosh
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Dodsworth, Orvus, Taylor County Normal, Medford
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Eggerding, Roland, Lutheran High School, 738 Villa St., Racine
Finch, V. C., University of Wisconsin, Madison
Fisher, Sophia, Charleton School, 4416 W. Silver Spring, Milwaukee
Fischer, W. C., Whitewater State Teachers College, Whitewater
Giovannia, Sister M., St. Marys Spring Academy, Fond du Lac
Grandy, Arlia M., Senior High School, Eau Claire
Huck, Dorothy L., R. 3, Box 5, Whitewater
Huebner, A. C., Lincoln School, 7810 W. National Ave., West Allis 14
Joseph, Sister Mary, St. Mary's School, 404 Seymour St., Wausau
Josephine, Sister M., Notre Dame Convent, 1324 N. Milwaukee St., Milwaukee 1
Johnson, Anna J., 2907 N. 44th St., Milwaukee 10
Kostka, Eleanor A., 418 Hawthorne, South Milwaukee
McMahon, Margaret C., Franklin Junior High School, Green Bay
Mueller, Clara S., Steuben Junior High School, Milwaukee 11
Robert, Sister M., O.S.F., Alverno Teachers College, 1413 S. Layton Blvd., Milwaukee 4
Rosentreter, F. W., 605 Cleveland Ave., Manitowoc
Schloerb, June, Washington 5th and Jefferson St., Wausau
Sharpe, Julia S., 2530 E. Johnson St., Madison
Smithwick, Mrs. Mary, Kewaunee Court House, Kewaunee
Stratton, C. G., 328 N. Fourth St., River Falls
Tilleson, Esther, 591 Jackson Dr., Oshkosh
Thomas, Olive J., State Teachers College, Milwaukee 11
Zellmer, Luther, Platteville

WYOMING

Linder, Ruth, University of Wyoming, Laramie

FOREIGN

Banks, Etobicoke H. S., Islington Ontario, Canada
Silva, Felipe, P.O. Box 179, Cienfuegos, Cuba
Palmer, S. Harold, 2231 Hyde St., Honolulu 24, T.H.

EDITORIAL NOTES AND NEWS

Plans have been announced for a geography institute to be held at the State Teachers College, East Stroudsburg, Pennsylvania, on April 27. The "purpose of the meeting is to promote a greater interest in geography, to display some essential geography materials, to present leaders in geography thought and teaching and to afford the opportunity to meet others working in this field." The speakers include Dr. Zoe Thralls, University of Pittsburgh, Dr. H. Harrison Russell, Bloomsburg State Teachers College, and Dr. Laurence F. Fountain, Lock Haven State Teachers College. In addition there will be displays of books and maps, a luncheon in the College Dining Room, and a tea in the gymnasium. Luncheon reservations should be made with Dr. Minnie E. Lemaire, State Teachers College, East Stroudsburg, Pennsylvania.

By 1947 a pipeline should be delivering crude oil from an oil field in the Bolivian lowlands to a rail head serving the people of the larger Andean cities. Daily capacity is to be 6,000 barrels, maintained by pressure developed by Diesel engines at three pumping stations. The line will be about 255 miles long and will extend northwest from the Camiri oilfield in southeastern Bolivia to the rail head at Tintin which is about 110 miles South of Cochabamba. Refineries at these terminals are also reported. The Camiri field is being tapped at depths of about 3,000 feet and is reported to have reserves of 21 million barrels. Thus far Camiri oil products have been delivered in containers hauled in trucks over dirt roads to Sucre and Santa Cruz or sent to Argentina.

New audio-visual aids on air transportation for junior and senior high schools may be secured on a free loan basis to schools by writing to United Air Lines, School and College Service. Department K.P., 23 E. Monroe, Chicago 3, Illinois.

Need of telephonic communication between India and China during the war was the spur that led to the construction of a pole line from Calcutta, India, to Kunming, China, an approximate distance of 1750 miles. In view of forests, towering mountains, rivers, floods and monsoonal rains, animal pests, and natives who had never seen a telephone, the feat was one of major proportions that somewhat parallels the task of building the Stilwell Road and the Ledo pipeline.

The first whaling factory-ship built in Britain in six years left Newcastle last fall for the Antarctic. The ship and its fleet of whale catchers will operate off South Georgia, near the Falkland Islands. The ship can process about 1200 animals during its six-months' trip. This should yield about 34,000 tons of whale oil which can later be used in the manufacture of margarine and soap. The whale meat will be dehydrated. If the anticipated catch materializes, this will provide a meat supply equivalent to about 60,000 head of cattle. The high protein content of whale meat, along with the margarine, is desperately needed by devastated Europe.

It is reported that domestic crude-oil production reached a new all-time peak in 1945 with a total of 1,711,000,000 barrels, an increase of 32 million barrels over 1944. Texas dominated the picture with a production almost twice that of second-place California. Oklahoma was third, followed in order by Louisiana, Kansas, Illinois, New Mexico, Wyoming, Arkansas, and Mississippi. The year marked a sharp increase in wildcat drilling, and a greater average depth of wells. Texas, California, Louisiana, Oklahoma, and Kansas lead in proven reserves, with Texas accounting for over half of the total reserves in the United States. Indications are that 2 billion barrels a year of new oil must be found to meet demands and maintain reserves at least thru 1950.

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Dr. Warman is Assistant Professor of Georgraphy, Clark University. His many years as a teacher in the public schools, and his constant association with teachers of geography has intensified his interest in geographic education.

Puerto Rico: An Interpretation. By William H. Haas 178

Dr. Haas is Emeritus Professor of Geography, Northwestern University and continuously active in research and in the field of educational geography. His latest book is The American Empire.

Iron and Steel: A High School Unit in World Geography. By Elizabeth S. Lichton 188

Mrs. Lichton teaches geography in the Waller High School, Chicago. She served as a member of the National Council committee on secondary school geography and her part of the report appears in the JOURNAL, March, 1945.

Camphor: Natural and Synthetic. By Warren Strain 194

Dr. Strain is Chairman of the Department of Geography, State Teachers College, Slippery Rock, Pennsylvania. His paper is another in the series on economic geography that he has contributed to the JOURNAL.

Shifting Desert Economies. By Charles W. Johnson 200

This paper was prepared while Mr. Johnson was still in military service as a companion paper to the one appearing in November, 1944 dealing with desert problems. Before induction he was an instructor in geography in the Junior High School, Lawrenceville, Illinois. He expects to continue his graduate work at the University of Wisconsin.

Learning the Language of Geography. By Edward J. Rutan 204

Mr. Rutan is now a teacher of English in the College of Engineering, Newark, New Jersey, and has written extensively for various educational magazines.

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Mr. Greenleaf is an instructor in Public School 223, Brooklyn, and Chairman, Department of Physical Sciences, Eron Preparatory School, New York City. He is author of numerous papers in the field of science.

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